

Can we engineer soldiers to be immune to chemical attacks?

Despite international bans, some countries, such as [Syria](#), use deadly nerve agents against enemy soldiers and civilians. Existing treatments for these [chemical](#) weapon attacks must be given quickly and don't always prevent convulsions or brain damage. Now, U.S. Army researchers have created a gene therapy that allows mice to make their own nerve agent–busting proteins, providing protection against the toxicants for months.

...

[Biochemist Moshe] Goldsmith and collaborators have tweaked an enzyme called paraoxonase 1 (PON1) so that it can help the body defang nerve agents faster. But the Army would need to produce and store large quantities of such “bioscavengers” for injection into soldiers and might need to [find a way to shield the proteins from the immune system](#) for them to be effective.

So scientists at the U.S. Army Medical Research Institute of Chemical Defense took a different approach: Turn the liver into a factory for making a bioscavenger enzyme.

...

Mice injected with the DNA-ferrying virus soon had high blood levels of the synthetic PON1 enzyme, which remained stable for the 5-month study. The rodents [survived nine normally lethal injections of nerve agents over 6 weeks](#), the Army team reports [January 22] in Science Translational Medicine.

[Read the original post](#)